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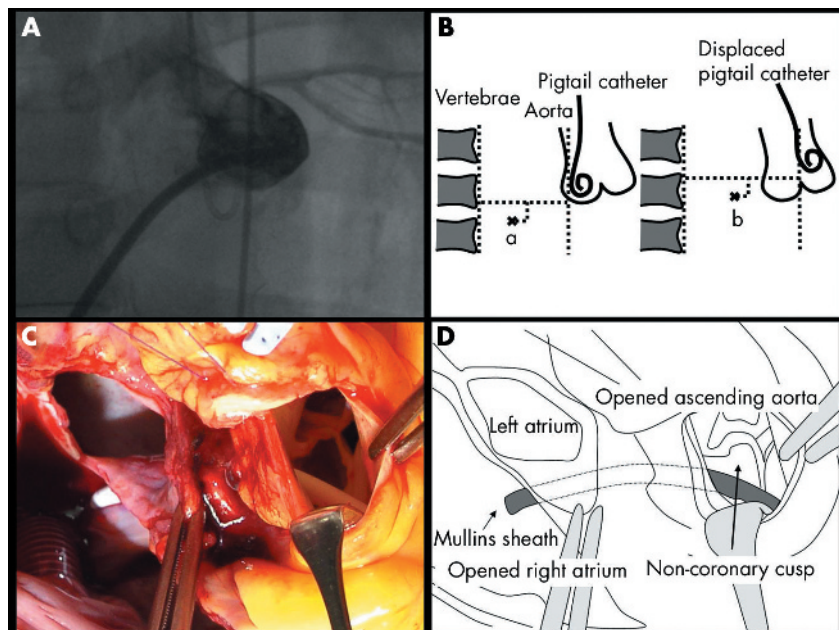
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Ascending aortic puncture during percutaneous balloon mitral valvuloplasty

Percutaneous balloon mitral valvuloplasty (PMV) is considered the treatment of choice for symptomatic patients with moderate to severe mitral stenosis who have favourable valve morphology. Serious complications including cardiac perforation can occur during PMV and sometimes require surgical correction. Here we present a case involving aortic puncture during the procedure.

A 48-year-old man was admitted for treatment of his rheumatic mitral stenosis. Echocardiography revealed severe rheumatic mitral stenosis and the calculated echoscore was 8. After introduction of a 5 French pigtail catheter to the right coronary cusp of the aortic valve, we inserted an 8 French sheath to the right femoral vein. Under fluoroscopic guidance in the right anterior oblique 45° angle, we attempted a transseptal puncture with a 70 cm curved Brockenbrough needle (USCI, Billerica, Massachusetts, USA) which tapers from 18 to 21 gauge at the tip. An 8 French Mullins sheath was inserted after the puncture. However, the Mullins sheath was inserted into the ascending aorta distal to the non-coronary aortic sinus. A left coronary angiogram was taken with a small injection of contrast media to the Mullins sheath (panel A). This error developed after the slight displacement of the pigtail catheter, then the puncture site was moved higher and laterally (panel B). The patient was moved to the operating room emergently with the Mullins sheath, and underwent removal of the sheath from the ascending aorta and mitral valve replacement therapy. Fortunately, the Mullins sheath penetrated the upper roof of the right atrium and punctured the lateral wall of the ascending aorta without injury to the aortic cusps (panels C and D). After successful surgery, the patient was discharged without further complications.



Left coronary angiogram obtained with a small injection of contrast media to the Mullins sheath inserted into the ascending aorta (A). The original puncture was intended for point "a". However, after slight displacement of the pigtail catheter, the puncture site was moved higher and laterally to point "b" (B). The Mullins sheath penetrated the upper roof of the right atrium and punctured the lateral wall of the ascending aorta without injury to the aortic cusps (C, photograph; D, diagram).

With a conventional transseptal puncture method with fluoroscopic guide, cardiac perforations can be complicated. Use of more refined methods or new devices, including intracardiac echocardiography, can minimise the risk of cardiac perforation.

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